JPRS 80399

24 March 1982

West Europe Report

SCIENCE AND TECHNOLOGY

No. 97

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

JPRS 80399

24 March 1982

WEST EUROPE REPORT

SCIENCE AND TECHNOLOGY

No. 97

CONTENTS

ELECTRONICS

Government To Aid Private Electronics Firm
(ZERO UN INFORMATIQUE HEBDO, 8 Feb 82) 1

Briefs
Sweden Designs Own Chips 3

ENERGY

Expansion of High-Speed Train Network Planned
(Didier Dalem; L'USINE NOUVELLE, 4 Feb 82) 4

Deep Underground Gasification Project Launched for Study
(LE SOIR, 5 Feb 82) 7

Briefs
Second in Situ Gasification Project 8

INDUSTRIAL TECHNOLOGY

French Looking Forward to Expanding Composites Market
(Bernard Broustet; LE MATIN, 2 Feb 82) 9

SCIENCE POLICY

Minister of Industry Comments on Industrial Policy
(Pierre Dreyfus Interview; L'USINE NOUVELLE, 3 Dec 81) .. 11

Minister of Research Interviewed on Research, Development Plan
(Jean-Pierre Chevenement Interview; LE NOUVEL ECONOMISTE, 11 Jan 82) 13

National Conference on Research, Technology
(Fabienne Tisserrand; ZERO UN INFORMATIQUE HEBDO, 25 Jan 82) 16

TRANSPORTATION

France's Participation in Civil Aircraft Projects Reviewed
(L'AERONAUTIQUE ET L'ASTRONAUTIQUE, No 6, 1981) 20

Saab, Volvo Develop Pure Methanol Engines
(Norbert Andersson; NY TEKNIK, 28 Jan 82) 26

Good Year for Airbus in 1981, Good Prospects
(ELECTRONIQUE ACTUALITES, 5 Feb 82) 32

ATR 42 Expected To Fill Important Niche in Commuter Market
(LA REPUBBLICA, 7, 8 Feb 82) 33

ELECTRONICS

GOVERNMENT TO AID PRIVATE ELECTRONICS FIRM

Paris ZERO UN INFORMATIQUE HEBDO in French 8 Feb 82 p 5

[Unsigned article: "Three Lines to Be Developed by Intertechnique with State Aid"]

[Text] "Government aid is not reserved exclusively for public enterprises," stated Jacques Maillet, president and director general of Intertechnique, the last of the private French manufacturers of data processing systems. His company and the government have just signed a "data processing and office automation" agreement, backed by 85.6 MFF in public financing. Mr Maillet attributes this confidence on the part of the authorities to the good financial standing of his enterprise, whose 1981 business turnover is estimated at 635 MFF, with a net profit of 33 MFF, or a return rate of 5.2 percent (net profit/turnover).

Mr Maillet explained that the satisfactory results of Intertechnique are due to the sound financial structure of this enterprise, "managed American-style to be internationally competitive." For 1981, he expects a turnover of 635 MFF (+25 percent), including 282 MFF (or 44.5 percent) for its data processing and instrumentation activities, 305 MFF for aeronautics, and 48 MFF for remote sensing.

He calmly cited low financial costs (1.3 percent of turnover in 1981 and about 2.8 percent this year), and a serious effort in self-financed research, or 8 percent of turnover.

While Mr Maillet hopes to devote a large portion of the profits to research, he is not turning down the government-sponsored research contracts. It must be remembered that Intertechnique cooperates actively with the Data Processing Agency on pilot studies such as Surf, Sirius, or Kayak. However, the Sirius-Delta distributed data-base management system, designed around three Realite 2000 computers, is not yet officially on the market.

After one year of negotiations, Intertechnique signed a "growth contract" with the government on 28 December of last year.

Progress of 40 Percent per Year

This data processing and office automation plan amounts to an investment of 418 MFF between now and 1985, including 250 MFF for studies. Government support amounts to 85.5 MFF, including 61.5 MFF in direct aid and 24 MFF in 15-year participatory loans at a discount rate of 9 to 11 percent. The remainder of the project will be financed at 364 MFF by the profits derived from the data processing activities of the group, which according to Daniel Blonde, deputy director general, are "definitely profitable."

In return for the government support, Intertechnique is committed to increase its data processing business by 40 percent per year over the next five years, and to increase its capital funding by 30 MFF in 1982.

Intertechnique figures (in million FF)

	1980	1981	
Intertechnique SA			
Turnover (parent company)	509.10	635	24.7 %
Net profit	25.77	33	28 %
Data processing and instrumentation			
Turnover	217.40	282.10	29.7 %
Remonte sensing and systems			
Turnover	43.30	48	10.8 %

Intertechnique's Capital

Intertechnique's capital is currently held by Marcel Dassault (20 percent), the SMarcel Dassault Central Company for Studies (9 percent), the Groupe Rivaud (18 percent), Jacques Maillet (13 percent), and by private stockholders for the balance.

11,023
CSO: 3102/157

BRIEFS

SWEDEN DESIGNS OWN CHIPS--From now on Swedish electronics companies do not have to import advanced highly integrated circuits, so-called chips. The section for electronic technology at Lund Institute of Technology has now for the first time shown that it is possible to build actual highly integrated circuits outside semiconductor companies. Building a highly integrated circuit consists of writing a computer program which generates the desired geometric patterns on the chip. The computer programs required for this have been developed at Lund. The entire computer system for the fabrication, including the display screen terminal, does not have to cost more than 35,000 kronor. This must be compared with normally at least 1 million. The fabrication of the chip itself will even in the future be reserved for a small number of "silicon foundries," but the construction work can therefore now be spread out to those who have the system knowledge. "The most interesting is that Swedish industry from now on will be able to maintain its competitive ability internationally," says Dr. Tech. Lars Philipson at the Institute of Technology. So far Sweden has been one step behind the United States and Japan. Now we ourselves can manage the development of components without having to rely on the goodwill of other countries. Those companies which have had to order "tailored" curcuits have had to pay for a high "entry ticket." This involves amounts in the millions just to develop prototype examples. [Text] [Stockholm DAGENS NYHETER in Swedish 6 Feb 82 p 23] 8958

ENERGY

EXPANSION OF HIGH-SPEED TRAIN NETWORK PLANNED

Paris L'USINE NOUVELLE in French 4 Feb 82 pp 45-46

[Article by Didier Dalem]

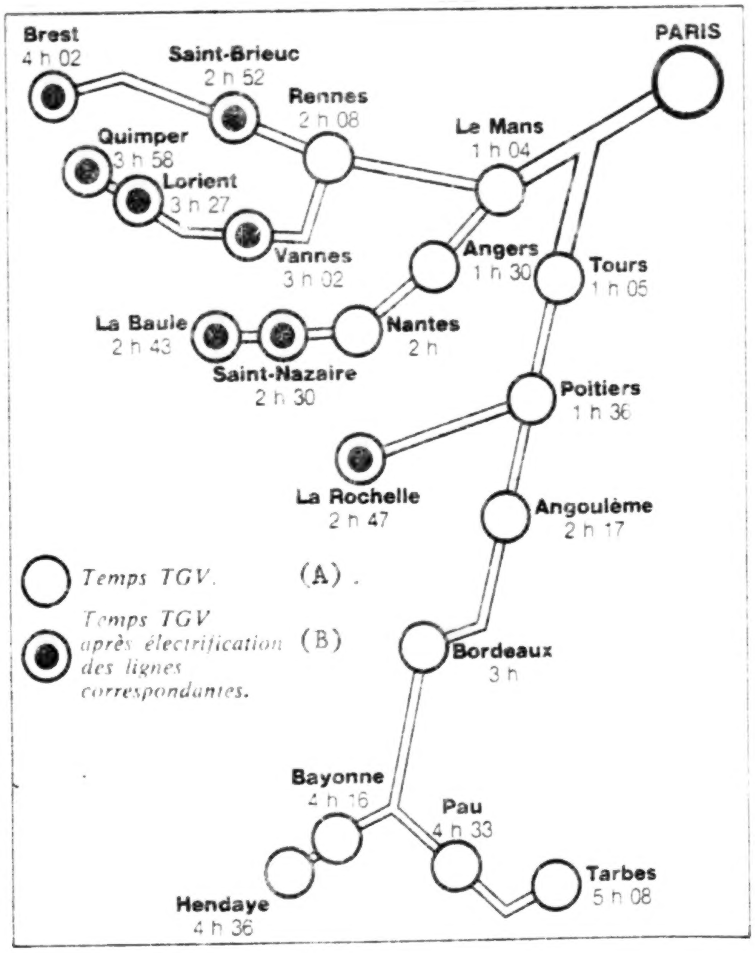
[Text] The French railway industry is being restructured around two major axes: Alsthom-Atlantique and Francorail-MTE. The placement in service of TGV Atlantique would work in their favor. But if the decision is taken, the first orders would not be ready before 1984.

The board of directors of SNCF (French National Railroads) has said "yes." The study for the construction of a second TGV (high-speed train) for the Ouest and Sud-Ouest (called the TGV Atlantique) has been sent to Pierre Mauroy with its approval. The decision now rests with the government, but it is hard to imagine that it would oppose a project which was formulated last September at the request of Francois Mitterand.

The operation would represent a market of some 10 billion francs for the industry. At the present stage of the project, the plans are to build a new track of about 350 km (compared to 425 km between Paris and Lyon); it would consist of a single line of some 100 km starting in Paris, which would split into two branches south of Chartres, the first going up to Mans, and the second up to Tours. Beyond these two towns, the TGV trains would use the existing tracks, renovated to allow speeds of 200 km/h.

The rolling stock would consist of about 100 trains, longer than the ones currently in service for Paris-Lyon (ten cars instead of eight), and technologically more modern. Anticipated placement in service is 1988.

In addition to the very significant improvement in service that SNCF would offer travellers, this project would come just in time for all railway construction. A restructuring plan currently in preparation at the Ministry of Industry, would provide for the formation of two axes of reorganization around Alsthom-Atlantique (Groupe CGE) on one hand, and the Francorail-MTE group on the other, these being the two groups which already share the Paris-Sud-Est TGV market.



Key: (A) TGV time
(B) TGV time after electrification of corresponding lines

The major priority operation in this plan is the purchase of Soferval (former Franco-Belge) by Alsthom, a move which has already been unofficially announced by Noel Josephe, chairman of the Nord-Pas-de-Calais Regional Council. But the Groupe CGE subsidiary does not intend to inherit such an industrial facility without adequate firm orders. The Paris-Sud-Ouest TGV could thus provide orders for this plant, at a time when conventional SNCF and RATP (Independent Parisian Transport System) equipment investments are tending to level off.

The Problem of Order Continuity

Delays are still a problem. The government's agreement cannot be expected before several weeks, and will be followed by a lengthy public utility hearing. For the manufacturers, the first equipment orders cannot therefore become a reality before 1984, or even 1985. But the Paris-Lyon TGV cannot guarantee anything after June 1983 for MTE (Groupe Jeumont-Schneider) and October 1983 for Alsthom. This a gap of several months, which places order continuity in jeopardy.

There are two market expectations for the industry: exportation, which remains tentative, and above all, SNCF, which is presumably preparing to order a series of 12 new trains of the current TGV type, in addition to the 87 initially expected. Ten of these should help service Marseille, Montpellier, and Geneva, while the two others are intended for PTT's (Mails, Telephones, and Telegraphs) postal TGV project. A second series of 12 trains might follow by this summer, and should facilitate connections with Atlantique.

11,023
CSO: 3102/160

DEEP UNDERGROUND GASIFICATION PROJECT LAUNCHED FOR STUDY

Brussels LE SOIR in French 5 Feb 82 p 2

[Article by O. C.: "Underground Gasification at Thulin Started"]

[Text] From our special correspondent--A world premiere in Thulin, at a location close to the French border, has been the launching of a special underground gasification project. The Secretary of State for Energy, Etienne Knoops, led the event in the presence of many personalities: Michel Tromont, minister of national education; the Mayor of Quievrain; ministers Philippe Busquin (Walloon region) and Robert Urbain (executive of the French Community); Humblet, chairman of SRIW; Vaes, of the Hainaut government; the ambassador of FRG in Brussels; and many others.

A world premiere, because the industrialized gasification process being used today is geared for the exploitation of thick coal deposits located at low depths. But in the case of the present process, which could be applied at other Belgian--and even European--locations, the objective is to use gasification for exploiting coal deposits lying at great depths.

The many technical problems raised by this objective have been studied by Belgian experts at the National Institute for Extractive Industries, who have worked in close collaboration with German colleagues; all of them were part of a new organization, the Institution for the Development of Underground Gasification (IDGS).

Three Goals

The preliminary work culminating the lighting ceremonies on Thursday, began in 1979. The current experiment has three essential aims. First, to demonstrate that the technique called retrocombustion, developed at shallow depths to establish connections between borings, can be applied at great depths, despite the low permeability of the coal layers. Next, to create for the first time in the world, an underground gas generator operating at high pressure. And finally, to verify that the borings used for the gasification of a first deposit can be deepened and reused to exploit a deeper layer.

An intensive effort will be carried out, and a new future for the mining industry will depend on its results.

11,023
CSO: 3102/157

BRIEFS

SECOND IN SITU GASIFICATION PROJECT--Two billion tons. That is the amount of our deep coal reserves. Its exploitation can now be contemplated thanks to underground gasification. A second program will be launched for this, after the experiments at Bruay-en-Artois. After several months of preliminary studies, a second four-year program for research on underground coal gasification will be carried out during the coming weeks at Nord-Pas-de-Calais. This program will be conducted by the Study Group for Underground Coal Gasification (CEGS), which brings together Charbonnages de France, the French Petroleum Institute, and the Bureau for Geologic and Mining Research; the group will base its studies on the information obtained from the first experiment, carried out at Bruay-en-Artois in 1980. The Haute-Deule site, northeast of Lens, was selected to burn a coal seam located at a depth of 800 meters, and to collect a combustible gas at the surface. For the Charbonnages personnel, this means carrying out the experiment to the end, and thus further than at Bruay-en-Artois. The first in situ lighting of the coal will take place in 1983. This second operation represents an investment of 125 million francs, and like the first tests, is supported by the EEC and the French government. The stakes are high, since underground gasification could make it possible to exploit the national deep coal resources, estimated at 2 billion tons. [Text] [Paris L'USINE NOUVELLE in French 3 Dec 81 p 75] 11,023

CSO: 3102/160

FRENCH LOOKING FORWARD TO EXPANDING COMPOSITES MARKET

Paris LE MATIN in French 2 Feb 82 p 25

[Article by Bernard Broustet: "Bordeaux, Capital of Composite Materials: a 2,000-Fold Market"]

[Excerpt] While Bordeaux got in on the ground floor with these materials, the reasons were not such as to generate much enthusiasm. The object was merely to make the French armed forces more effective. SEP [European Propellant Company] propulsion systems for French strategic missiles while SNIAS [National Industrial Aerospace Company] makes the mainframe. Both companies needed high-performance parts: the combustion piping has to withstand very high temperatures, while the missile body must not sustain damage from liftoff and thermal shocks.

Only composite materials were capable of meeting these requirements. Initially, glass fiber was used but was soon supplanted by carbon fiber and Kevlar; the latter two have very specific properties: Kevlar has better tension resistance, and carbon has better resistance to compression and, strangely enough, heat.

There are obviously immense advantages to working in such a strategic area. Cost prices are not overwhelming, and the order book is large enough to obviate concern for the long term. SEP and SNIAS have taken advantage of these favorable conditions and run up a fabulous record in the area of high-performance composite materials. SEP has perfected 4D, which is composed of carbon fibers woven in four dimensions and is absolutely unique. SNIAS has developed in its factory at Saint-Medard-en-Jalles spinning and, especially, weaving processes that are in the forefront of world technology.

The possession of this technological potential is of stupendous importance, because high-performance materials are the wave of the future in countless fields. "There were the Stone and Iron Ages. Now we are entering the age of high-performance composites," says Mr Hugues, director of the Saint-Medard-en-Jalles factory. "We are sure that composites are going to burst into technology like the transistor."

The list of civilian applications already undertaken or under study is extremely impressive. SEP is already producing brake discs tested on the Ligier and the Elf motorcycle. In the area of disc brakes, it hopes to win the large Airbus market. It has perfected drive shafts and helicopter brakes that are much more effective than mechanical brakes. It has signed a contract with Peugeot to develop a car for the year 2000 that will burn 3 liters per 100 km and contain many parts made of composite materials: body parts, suspension triangles, etc.

There are other applications that might be surprising on first sight; prosthetic joints. "Originally, it was a coincidence," said Mr Malassine, director of civilian applications. "We met a surgeon at an exposition and talked to him about our products. He told us they should 'get off on the right foot' in prosthetics."

Indeed, they do seem to work. Carbon-fiber prostheses are not rejected by the body. They are extremely supple and have an indefinite life expectancy, unlike present prostheses, which have to be replaced about every 5 years. As of now, conclusive experiments have been carried out on sheep hips. An application will probably be made to the human body by the end of the year.

SNIAS is also thinking about civilian applications. Tubes for offshore drilling are being developed that are light and durable and should considerably improve oil exploration. Some thought is also to be given to automobiles, in collaboration with Renault. In the near future, materials are expected to be developed for compressed gas storage (e.g. butane canisters) in collaboration with Composite HP, a small subcontractor located near Bordeaux that is doing a land-office business.

France and especially the province of Aquitaine seem to be off to a good start. They benefit also from the 5 university laboratories working in this area. And there is regional political and economic support; at the urging of the expansion committee and with the blessing of the regional council, the CODEMAC [expanion unknown] think-tank has been formed, bringing together researchers, engineers, politicians, and economists.

Working through the regional office, CODEMAC has sent to Paris a report on the establishment of a national institute for composite materials. This institute's mission would be mainly to disseminate information, train instructors, meet the needs of the PMI [small and middle-sized industries], and promote automation processes. If created, the institute would confirm Bordeaux and the region as the driving force in this area. This role was recognized by Jean-Pierre Chevenement at the last research meeting.

It is up to local politicians to continue to work to have this plan implemented. It has to be done. It gives Aquitainians a chance better than any they have ever had to show they can make something other than wine or goose-liver paste.

A Promising Market

The outlook for growth in the use of composites is staggering. If we are to believe a study from the Courtaulds group in the United States, use of composites should increase 8-fold by 1990 in the field of aeronautics and 2,000 times in automobile manufacturing. Judging by a document from Ford, the use of composites can reduce the weight of the body and doors by 61 percent, the shock absorbers by 74 percent, and the suspension springs by 80 percent.

8782
CSO: 3102/152

MINISTER OF INDUSTRY COMMENTS ON INDUSTRIAL POLICY

Paris L'USINE NOUVELLE in French 3 Dec 81 pp 66-68

[Interview with Pierre Dreyfus, minister of industry]

[Excerpt] Step by step, the minister of industry is shaping the new industrial policy, founded primarily on the protection and development of France's assets. Pierre Dreyfus explains it in his own words.

[Question] In what way is your policy a new one?

[Answer] It is new in the sense that if we pursue a policy of aid for advanced industries, we also help one by one, the traditional industries which provide the majority of the industrial employment. But our action is a recent one and the path is arduous, because the traditional industries have been abandoned to their own devices for too many years. I might point out that at the same time, we must support enterprises which are encountering difficulties, and launch nationalization.

[Question] All the branches cannot be helped equally; you will have to choose.

[Answer] Of course we will have to choose. The industries are undergoing transformations: some are developing rapidly, others are retrenching and finding other orientations. In the textile industry for instance, the creativity and quality of French fabrics were much more sustained in the past than they are now. But this will change. Since the industrialists gathered the impression that the ministry was interested only in advanced industries, and that the international division of labor was all that mattered for the rest of them, it was all somewhat discouraging. Especially since they were being told that the situation was worsening every year. But we are saying that it will not become worse, neither for textiles nor for machine-tools.

[Question] How can you reconcile employment priority and competitiveness, hiring and automation, recapture of the domestic market and an orientation toward the outside?

[Answer] Employment will be very threatened if the manufacturing industries retain their old machinery. It will be threatened because it will no longer be competitive. If the automobile industry does not rapidly change its means of production, we can be sure that it will not be able to provide as many jobs in the future. The machine-tool plan has been formulated specifically to reconcile employment and competitiveness.

[Question] The manufacturing business has moved from expectation to a certain mistrust. Can you change this attitude, and how?

[Answer] I am not so sure that business leaders are distrustful. In the Midest, in Lyon, I met industrialists who were often gloomy, but I did not find them hostile toward us. I even felt a certain warmth. I rather feel that enterprise directors are more concerned by the state of their businesses than by politics.

[Question] Do you believe that industrialists will invest?

[Answer] Yes, as long as the pump is primed, and it will be primed by public investment. I am optimistic because I know that this will take place after consumption starts anew, a situation which we see to be true. On several occasions, in periods of crisis, public investment ushered in private investment; that is what will occur in 1982.

11,023
CSO: 3102/160

MINISTER OF RESEARCH INTERVIEWED ON RESEARCH, DEVELOPMENT PLAN

Paris LE NOUVEL ECONOMISTE in French 11 Jan 82 pp 33-34

[Interview with Jean-Pierre Chevenement, minister of Research and Technology, by Gilles Coville: "Jean-Pierre Chevenement: How to Catch Up With Germany"; date and place of interview not given]

[Text] LE NOUVEL ECONOMISTE: The report on the 1970's that you have drawn up is rather favorable to businesses that have increased their research budgets, while the government, all things considered, has reduced its expenditures. How can they now be encouraged to do more?

Jean-Pierre Chevenement: Business started out so low that all they could do was increase their research effort. However, the share of research financed by industry, about 0.8 percent of the GDP [gross domestic product] of France, is still not up to the levels of German and Japanese industry, about 1.2 percent. The problem is how to go about making French business increase its effort. Habits are hard to form, and I think a whole panoply of measures will have to be orchestrated: aid from ANVAR [National Association for the Valorization of Industry] will have to be increased and diversified; there will have to be mobilization programs bringing together large research organizations, technical centers and businesses; tax support, which I would like to see studied; middle- and long-term credit for innovation; action by INODEV [expansion unknown] and financial companies supporting innovation to help innovative businesses increase their own capital; reform of technical centers, etc.

As all that cannot be done immediately, I am also counting on the pilot role that national corporations must play; they provide about half of national industrial research money.

LE N.E.: Do you see research as one of the subjects that government and management can agree on?

J.-P. Chevenement: I feel that professional leaders are aware of the challenge of research and technological innovation. They are ready, but at the moment they have not yet made the necessary effort in many fields. I expect the industrialists really to loosen up. I don't just want 1,300 businesses doing research. The number can easily be doubled. We can look down the road a few years and set a much more ambitious objective: more than 5,000 businesses. ANVAR will have helped nearly 2,000 companies already in 1982. So we are getting into gear. Of course, you have to realize that what you can expect from a company differs greatly according to its size. For a small or middle-sized company, doing research means first of all improving its technical knowledge and creating a minimum number of structures that will enable it to gain access to technical centers and public research laboratories.

LE N.E.: You have set a very ambitious general objective: to devote 2.5 percent of the GDP to research by 1985. Will budgetary constraints allow you to reach this objective so quickly? Aren't you already having trouble putting this ambition into practice?

J.-P. Chevenement: The government's objective is ambitious, of course, but it does show its desire to see France move into the forefront of developed countries in its capacity to invest in research and technology. The 1982 budget already shows our desire for recovery, and its growth corresponds to the objective set for 1985. The plan that will be set forth will include the objectives outlined in the interim plan. This interim plan, as you know, provides for an increase in civilian research budgets of more than 17 percent a year between now and 1985. Of course, you don't think I can get all that without putting up a fight. You certainly wouldn't believe me if I told you differently. Come back in 1985!

LE N.E.: In research and technology, what strengths do you want France to have that competing countries like the United States, Japan or the FRG have?

J.-P. Chevenement: I don't think that an American, Japanese or German model can be transposed to France. Every country has its own traditions, cultural context, and spirit. However, I do note that in the United States, ideas circulate better and faster: there are fewer barriers between federal agencies, public laboratories, and industry. In Japan, I note that the Miti has been able continuously to have all its partners work together and effectively direct both industrial and university research into a few promising directions that are great technological challenges (microelectronics, information processing, and biotechnology). Japan also possesses a very advanced system for collecting and disseminating scientific and technical information: a multitude of terminals located throughout the country make it possible to find out what is going on in the world on any subject. As for the FRG, I think its industry realized back in the 19th century how important research is. It has recruited engineers trained for research in the best universities ("Technische Hochschulen"). The directors of big business are often men who have come up through the laboratories. The link between university laboratories and industry, particularly in chemistry, is a part of their culture. I would also add that for the last 26 years, the FRG has had a powerful motivating force behind research policy, the BMFT (Federal Ministry for Research and Technology). This structure and the political will behind it has made Germany catch up with and pass us; in most of the great branches of industry, research is much greater than ours.

LE N.E.: You wanted a great national debate on research that would be both democratic and efficient. Which won out: democracy or efficiency?

J.-P. Chevenement: I have the weakness of thinking that democracy is not incompatible with efficiency but rather ensures it. In any research work, be it in a laboratory or in a great cooperative project, efficiency implies the circulation of information, defining needs, dialogue, exchanges.

A colloquium and the time spent in preparing for it are not time wasted, judging by the fundamental convergences that are already appearing. No one contests the necessity of an unequaled effort in scientific research and technological development.

There are grounds there for a certain national unity, and that doesn't happen so often that it fails to attract our attention. Everybody agrees on a comprehensive policy of scientific information and development of technical education, and on the fact that researchers have something to do in this field. That implies a more open concept of the researcher's vocation. I think the whole thing is well under way.

The problem of scientific employment has been set forth in a completely new way by taking into account not only the personnel of public organizations but also those who work in industrial research. People are coming together on the idea that the development of basic research should go hand in hand with application. But you can't convince researchers of this unless some guarantees are made to them: no mobility without corresponding social progress.

Another idea has been forcefully expressed: the regional dimension, which a policy of technological research and development must take into account. The regional bases are extraordinarily rich: every region has in some way outlined the future it prefers.

Finally, priorities are taking shape in certain sectors, such as scientific instrumentation, biomedical engineering, medicines, and the agricultural-food industries. In sum, the debate over regional bases a sector colloquiums have caused the notion of "moblizing programs" to emerge. This programs will bring together a coherent pattern of technological and industrial research and development and will do for France in the 1990's what the great technological projects of atomics, space and aeronautics did in the 1960's in the context of a policy of national independence.

By leading the way for business, the mobilizing programs will have a multiplying effect on a whole series of branches of industry where research has so far been insufficient: construction, mechanics, agriculture-food, etc.

8782
CSO: 3102/149

NATIONAL CONFERENCE ON RESEARCH, TECHNOLOGY

Paris ZERO UN INFORMATIQUE HEBDO in French 25 Jan 82 p 36

[Report by Fabienne Tisserrand]

[Text] If, as Pierre Mauroy indicated at the close of the National Conference on Research and Technology, research must help "the country out of its crisis," the priority among priorities "might be data processing." Indeed, microelectronics, data processing, and software have been characterized by one of the conference commissions as "strategic areas of exceptional importance," on a par with energy and raw materials. As for robotics and the automation of the means of production, they belong to "sector of technologic domains associated with production and national independence."

"An economy which imports its equipment requirements is in danger of becoming lastingly dependent on foreign suppliers, thereby losing control of its production processes and of the development of its employment structure."

The work of this conference has brought out the need to consider the international aspect of research. Trends in technology cannot be visualized in a strictly national context: in 20 years the French will represent 1 percent of the world's population.

The conference findings suggest "working towards a unified European research, technology, and industrial effort," this being one of the conditions for escaping the technologic and economic domination of Japan and the United States, especially in the field of data processing. It should also help transfer scientific and technologic achievement toward the Third World.

For 1985, the government has set itself an ambitious goal: to reach a research and development budget which will represent 2.5 percent of the gross domestic product.

Competent Researchers

According to one of the commissions, what this means in practical terms is the hiring of 3000 researchers per year in industry, and 1000 in public research.

Can training facilities guarantee the qualification of such numbers of researchers in such a brief period? Is there not a risk that their competence will suffer? Will the available legislation allow for eventual retraining in cases where evaluation criteria, which are essential for good research, might make this necessary?

An Interconnecting Network

According to one of the study groups, the whole of industrially-oriented technical research must "tend to form an interconnected network at the national as well as regional level." The group proposed the formation of an ANRT (National Association for Technical Research) type agency, to coordinate technologic research, or to organize liaison between public research and PMI (small and medium-sized businesses), especially at the regional level, and with the support of ANVAR (National Agency for the Valorization of Research).

The latter solution is the one adopted by the government: the Prime Minister has announced an increase in the ANVAR budget, which will reach 760 MFF for 1982. Consequently, this organization's aid to PMI will be expanded.

The Technologic One Percent

In order to finance the various technologic research centers, the commissions are proposing "the technologic 1 percent."

This measures provides, over a few year's time, for the gradual replacement of parafiscal taxes with a general tax on enterprises, which would amount to 0.3 percent of the value added by each enterprise.

Enterprises seeking technical assistance could approach any private or public industrial research center, "provided that the latter is approved and recognized for the purposes of technical assistance."

The government would then cooperate on an equal share with the enterprise, in financing the technical assistance and applied research.

The conference brought out the need to establish "a public agency for technologic options," responsible for conducting several concurrent independent studies on socieconomic and ecologic impact. In response to this proposal, Jean-Pierre Chevenement has anounced the establishment of a generously endowed Institute for Projection and Forecasting, to "clarify options and strategies" and to coordinate the units distributed among ministries, professional sectors, enterprises, and regional organizations.

Following the example of newly introduced data processing in enterprises, one commission suggested the formulation of "a methodology for introducing new technologies in enterprises, in the form of minimum regulations to be observed," with its application being supervised by an enterprise committee.

Chevenement's Proposals

The research and development budget, amounting to 50 billion FF in 1982, is to be increased by 30 billion constant FF by 1985 (or an increase of 17.8 percent per year).

The role of public organizations (CNRS (National Center for Scientific Research), Inria (National Institute for Data Processing and Automation Research), AEC, and so on) and of universities, will be strengthened. They will assure the development of tomorrow's major technologic processes, support inter-sector research projects, and encourage the dissemination of technologic education in the social and economic structure.

A new type of public organization, of a scientific nature, will be studied.

A new decentralized research policy will take into account the development of regional centers for research and technology. ANVAR, already regionally established, should help make PMI more responsive to new technologies. Its role and budget will be increased (760 MFF for 1982).

Democratize research: at the national level, the government will propose that Parliament acquire an office for evaluation of technologic options, to be staffed by members of parliament.

A higher council for research and technology in the Ministry for Research and Technology, half of which would be composed of science personalities, and half of representatives from enterprises, unions, and professional associations, would have to be consulted about major decisions in scientific and technical policy.

At the regional level, consulting committees would be established at regional councils.

In order to be recognized as such, scientific research specialties will benefit from special reference job descriptions; the job descriptions of personnel in various public research organizations, while retaining their specific nature, will be coordinated and adapted to allow free circulation of personnel among public organizations, educational structures, and national enterprises.

The creation of new jobs at the rate of 4.5 percent during the coming years, will lower the average age of researchers.

The establishment of a training policy should attract the younger generation to research. Specific training programs will be undertaken in the microelectronics sector.

An attempt must be made to double the number of research engineers by 1985, with the set goal of having trained 1000 engineers by that date.

An Institute for Projection and Forecasting will be generously endowed.

Establishment of CESTA

At last Wednesday's session of the Council of Ministers, Jean-Pierre Chevenement presented a statement on the creation of a Study Center for Advanced Systems and Technology (CESTA), which will be located in the former building of the Ecole Polytechnique, alongside the Ministry of Research and Technology.

The major objective of CESTA will be to contribute to the development and dissemination of new technologies, while analyzing and preparing means to integrate them into the social, economic, and cultural structures of French society.

In order to carry out this program, CESTA will be organized into four major tasks:

Studies and research (for which a scientific and technologic projection mechanism will be established);
Assistance for technologic options;
Training;
Support and dissemination.

In particular, CESTA will act as liaison with regional and national associations established as a result of the National Conference on Research and Technology, to further investigate and assure the valorization of the analyses and proposals accumulated during the last six months. CESTA's activities will begin in March-April 1982.

11,023
CSO: 3102/156

TRANSPORTATION

FRANCE'S PARTICIPATION IN CIVIL AIRCRAFT PROJECTS REVIEWED

Paris L'AERONAUTIQUE ET L'ASTRONAUTIQUE in French No 6, 1981 pp 3-22

[Excerpts] Airbus Industrie

The Airbus A-300 and A-310 continue enjoying substantial marketing success, with the number of A-300's now on order (price: around $40 million) totaling 316, of which 237 are firm orders, and that of A-310's being 153, for a sum total of 469 planes on order by 40 different airlines. Production, which is shared by some 120 French firms, suppliers of structural elements and equipment, is now proceeding at the rate of 4 planes a month (44 planes for 1981).

A-300

The A-300, with 144 planes in service having totaled 750,000 flight hours, is a medium-range airliner propelled by two SNECMA [National Aircraft Engine Study and Manufacturing Company]/General Electric CF6-50C2 or by two Pratt and Whitney JT9D-59A jet engines, carrying normally 269 passengers with baggage and flying at a speed of Mach 0.86. There are two versions, the A-300-B2 with a maximum weight of 142 tons and a cruising radius of 3,200 km, and the A-300-B4 with a weight of 157.5 tons and a range of 4,800 km.

The diameter of the fuselage is optimized for seating 6 to 9 persons per row with two aisles for circulation. Underneath the floor, the hold can accommodate either two LD3 containers side by side, or one LD1 container, or one LD6 container, or one pallet.

The plane has obtained a Category III B certificate of navigability for the versions produced for Air France and Air Inter.

In December 1980, it underwent its first digital automatic all-weather landing tests using an SFENA [French Air-Navigation Equipment Company]/Smiths installation of reduced volume and weight.

We note also that:

--MBB [Messerschmitt-Baldow-Blohm] at Hamburg has run a test evacuation at night and without lighting using inflatable exit ramps (280 passengers were evacuated in 90 seconds);

--The conversion of a passenger transport plane to a mixed cargo and passenger version can be completed in 24 hours;

--One of the last orders received is that of Saudi Arabia, for the A-300-600 version powered by Pratt and Whitney jets. (Its first flight is scheduled for May 1983.);

--A rudder made of carbon fibers in Hamburg (20 percent gain in weight) has been tested in flight at Toulouse prior to mount it on the planes ordered by Lufthansa;

--For the fabrication of its thousands of sheet metal parts, the Bremen plant has installed a special workshop equipped with stamping presses ranging up to 26,000 tons, automated machine tools and robots equipped with optoelectronic sensors for the displacement and assembling operations.

A-310

The A-310, 153 of which have been ordered by 11 airlines, its first flight being scheduled for the end of April 1982, will have not only a shorter fuselage but also a new airfoil profile.

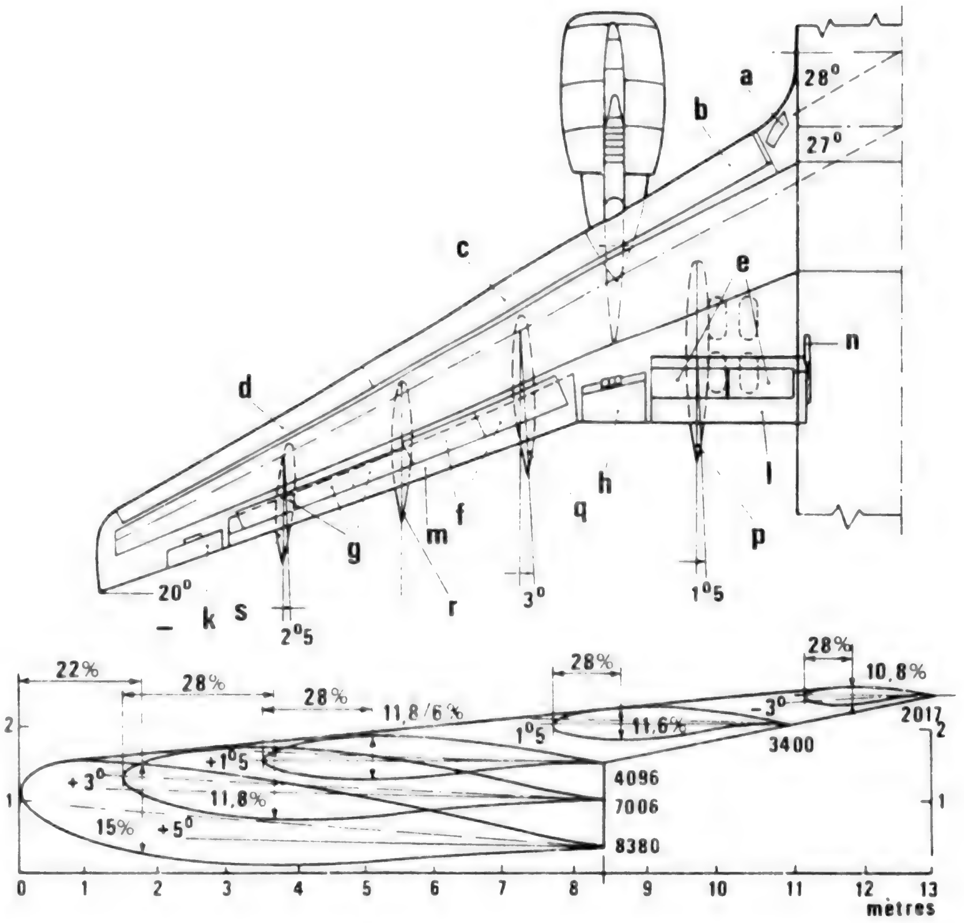
The wing (Fig 17), which has a sweepback of 27 degrees at one-fourth the chord, has a span of 43.9 meters, an area of 219 square meters and an aspect ratio of 8.8, supercritical profiles of 15-percent thickness ratio at the root and 10.8 percent at the tip, and an aerodynamig twist corresponding to an angle of +3 degrees at the root and -3 degrees at the tip. It has on the leading edge a small Kruger tab (a) and slats (b, c, d); on the trailing edge air-brake spoilers (e, f, g); an all-speed aileron (h), a low-speed aileron (k) and flaps (l, m) whose trackways are located respectively in (n, p) and (q, r, s). A 1/10-scale elasticity-test model built by VFW [expansion unknown] was tested in the ONERA [National Office for Aerospace Studies and Research] S2 wind tunnel at Modane; the results obtained fully confirmed the calculations relative to flutter.

The interior configuration of the fuselage was studied and a full-scale model built by MBB in Hamburg. Passenger headroom has been increased by 70 percent, which will improve comfort and permit the overhead luggage compartments to be made larger.

The pilot's station, of the FFCC [forward-facing crew compartment] type, will benefit from the experience gained in the most recent versions of the A-300. The on-board auxiliary generator will be a Garrett GTCP-301--smaller, more economical and quieter. Stowage under the floor will accommodate 14 LD3 containers.

The forward landing gear will be the A-300's Messier landing gear.

The plane will also be available in a convertible version, the A-310-C, and in a cargo version, the A-310-F, which can take on 12 pallets measuring 3.2 meters by 2.25 meters each, and even, if need be, 16 pallets arranged two rows abreast. The payload will be 36.8 tons on the A-310-C and 39.4 tons on the A-310-F. Both



Key: [see text]

Fig 17 - New Airfoil for A-310.

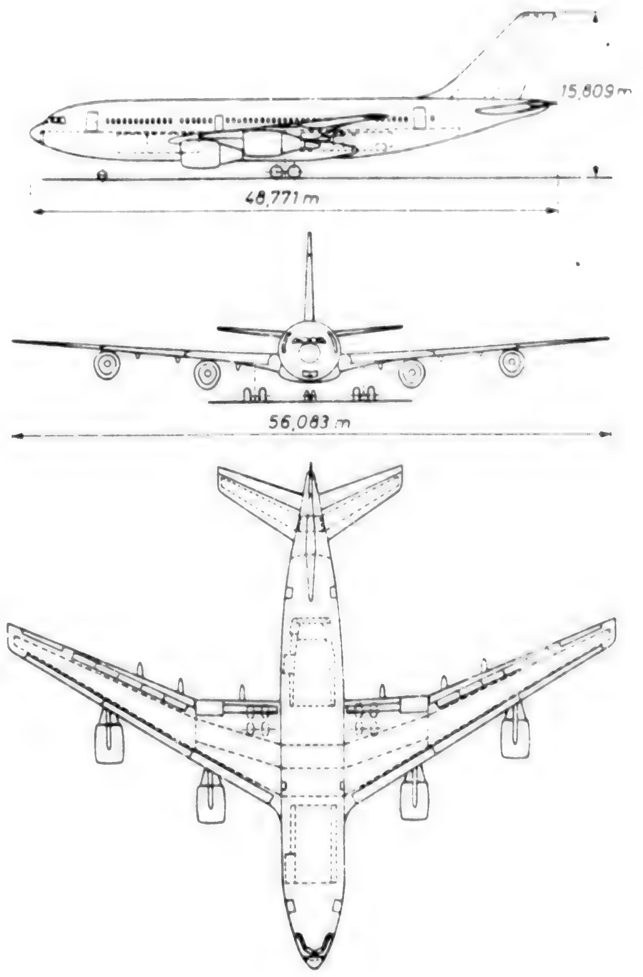


Fig 20 - Side, front and plan profile views of TA-11.

versions will have a large lateral loading hatch 3.58 meters wide by 2.57 meters high. They will be able to cover a distance of 5,600 kilometers.

The building of the three prototypes is proceeding at a lively pace. The AEROSPATIALE [National Industrial Aerospace Company] plant at Saint-Nazaire delivered fuselage section 15/21 to Toulouse on 16 May 1981, the after section 16/19 built by MBB in Hamburg arrived on 28 June and the fore section 13/14 built by MBB at Bremen arrived at the same time, enabling assemblage of the hull.

TA-9, TA-11 and TA-12

The Airbus extension projects, namely, the TA-9, a 400-passenger jumbo jet in the economy version, and the TA-11, a four-engined jetliner designed to carry 220 passengers over distances of 12,000 km (Fig 20) and of particular interest to Lufthansa, will be equipped with a larger wing having a span of 56.08 meters, an area of 330 square meters and an aspect ratio of 9.5. The Fuselage of the TA-11 will consist of elements identical to those of the A-300 and A-310. The design departments are also working on a new project that has been baptized the TA-12. The plane, an intermediate one between the two above-mentioned designs, will be a twin-engined jet, carrying only 220 passengers, will have the same airfoil, and will cover a maximum distance of 8,500 km.

A-320

With the TA-9, -11, and -12 not scheduled to be put into service before 1988, the new French government has given the green light for the development of the A-320, a short-range twin-engined, 130- to 170-passenger jetliner, of which Air France has already reserved 50 (25 on firm orders, 25 options), and which could be avilable by 1986.

Two versions are being planned: The A-320-100 which will measure 36.04 meters in length and will carry 134 passengers, and the A-320-200 whose greater length (39.24 meters) will accommodate three more rows of seats and hence enable it to carry 152 passengers.

The wing, identical in the two versions, will have a span of 34.57 meters, an area of 125.8 square meters, and an aspect ratio of 9.5. The diameter of the fuselage will be 3.95 meters, that is, smaller than that of the A-300 and A-310, but nevertheless larger than that of the Boeing 727 by 19 cm. Its fuselage will thus provide increased passenger comfort. Passengers will be seated six per row, in two banks of three seats each, measuring 1.575 meters per bank, along a central aisle. The height of the fuselage, which will be 4.14 meters (3.95 meters on the Boeing) will enable the stowing of LD3 containers. The cockpit will be configured for two pilots.

The plane will be powered by two jets of the 11,300 daN-thrust class, which may be SNECMA/General Electric CFM-56-2000's or Pratt and Whitney 2-025's or Rolls-Royce/Japan RJ-500-35's.

It will have a cruising speed of Mach 0.76 at an altitude of 11,000 meters and can be ferried a distance of 5,700 km. Its other principal characteristics and performance ratings are given in the following table:

Item	A-320-100	A-320-200
Length, m	36.04	39.24
Span, m	34.57	34.57
Area, m^2	125.8	125.8
Empty weight, kg	39,500	40,800
Takeoff weight, kg	66,000	71,900
Maximum payload, kg	16,400	19,600
Total hold capacity, m^3	38.7	48.2
Fuel tank capacity, kg	18,800	18,800
Wing loading, kg/m^2	520	570
Thrust-weight ratio	0.34	0.32
Cruising range (with fuel reserves), km	3,500	3,700

ATR-42

In July 1980, AEROSPATIALE signed an agreement with the Italian firm AERITALIA [expansion unknown] providing for joint study of a regional transport plane.

Such a plane was defined, based on a comparison of the French SA-35 and the Italian AIT-230, and baptized the ATR-42. It will transport 42-46 passengers but will also be offered in a cargo version.

The decision to put it into production (estimated cost put at 1 billion francs, 40 percent of which for the account of France) was scheduled for the fall of 1981 following consultations with the airlines. As of 1 June 1981, 26 airlines had expressed interest in this plane and estimated their possible needs (200 planes). The world market is put at 3,700 planes, which could be sold at a price of the order of $5 million and produced at a rate of 4 per month.

Its overall length being 22.7 meters, its fuselage will provide a pressurized cabin 13.85 meters long, 2.57 meters wide and 1.90 meters high (volume: 44.8 m^3) that will accommodate 42 passengers at 32-inch row spacing, or 46 passengers at 30-inch spacing, seated 4 per row. It will have a toilet and wash-basin compartment, a buffet compartment, a hostess's seat and two baggage compartments, one forward and the other aft, with volumes of 6 m^3 and 2.7 m^3 respectively. The cargo version, which can be loaded through side hatches or by aft ramp, will accommodate five LD3 containers.

The wing, high and straight, will have a span of 24.57 meters, an area of 54 m^2 and a substantial aspect ratio of 11.3. It will consist of a rectangular, constant profile central section enveloping the nacelles of the two engines, and two conic end-sections equipped with deiceable leading edges. The tailplane will be T-shaped.

The main landing gear, with a 4.1-meter track (16.6 percent of the wingspan), will have on each side a dual-wheel assembly retractable into a streamlined lateral fairing. The nosewheel will also be dual.

The plane will be equipped with two turboprop engines, either Pratt and Whitney of Canada's PW-100/2 (formerly PT-7) or General Electric's CT7-9 rated at 1,800 shaft horsepower.

Its empty weight will be 9,060 kg and it will carry a payload of 3,800 kg (42 passengers) a a fuel weight of 1,640 kg, giving it a takeoff weight of 14,500 kg (wing loading: 270 kg/m^2; load per hp: 4 kg). The maximum commercial loading will be 4,720 kg and the maximum fuel load (4,500 kg) will permit the plane to cover a distance exceeding 2,000 km unloaded. Its maximum cruising speed will be 510 km/hr and its range, with 42 passengers on board and the customary reserves, will be 1,300 km, coverable in 3 hours at an average speed (takeoff to landing) of 440 km/hr. Its fuel consumption will be around 520 kg per hour at an altitude of 6,000 meters.

9399
CSO: 3102/144

SAAB, VOLVO DEVELOP PURE METHANOL ENGINES

Stockholm NY TEKNIK in Swedish 28 Jan 82 p 4

[Article by Norbert Andersson: "NY TEKNIK in Saab's Secret Laboratory: The Swedish Alcohol Engine Well on its Way.]

Background

[Text] The development of the Swedish methanol engine was ordered by Svensk Drivmedelsteknik (formerly Svensk Metanolutveckling). Most of the project is financed by Stu with 4 million kronor.

Sweden got started late with the methanol engine as compared to, for instance, West Germany.

Earlier responsible authorities tended to mix in smaller quantities (10--15 percent) of methanol or ethanol in all gasoline for vehicles.

But in the government energy bill, which came last spring, the government presented a completely different attitude.

A number of car fleets will in the future run on pure methanol. Examples of such car fleets are taxis, the telecommunications administration and the post office.

Only a few percent of methanol will be mixed in. The purpose of this is to stimulate production by creating a market for methanol producers.

At the same time the plans for a 10-15-percent mixture of ethanol have been more or less buried. The reason is primarily the high price of ethanol as compared to methanol and the fact that the EC countries seem to lean towards methanol as a replacement for gasoline.

Sodertalje

Now the Swedish alcohol engine is coming. Volvo and Saab are each independently developing engines which run on pure methanol.

NY TEKNIK has as the first magazine been allowed to take a look at the development work in Saab's secret engine laboratory in Sodertalje.

In one of the many anonymous corridors in Saab's "secret building" the walls are rumbling faintly. It is here that the next generation of engines is being tested.

"One of the world's smallest engine laboratories," says Per Gillbrand, chief of Saab-Scania's engine development. But his voice carries a great deal of pride.

Here, in a sound-insulated room with flexible cords and hoses hanging from the ceiling, the methanol engine is being tested on a test stand.

"In this first stage of the development work we are trying to optimize the fuel-air mixture, the compression and the ignition adjustment," says Per Gillbrand.

The octane number for methanol is usually given as approximately 108. This is ten units more than for premium gasoline. According to current theories this should mean that through a higher compression one should be able to utilize the energy in methanol better than in gasoline.

"Purely theoretically methanol should give us up to 10% better energy utilization."

"But the question is to what extent we can utilize the high octane number of methanol."

The octane number is namely in part the result of a measurement method called the RON method, which is incomplete for methanol.

A single cylinder test motor is run at low speeds of rotation. The compression is increased continuously until the fuel is self ignited, which means that the engine knocks. The high heat of vaporization (great cooling capacity) of methanol makes it possible for the compression to be increased to a level which corresponds to approximately 108 octane for gasoline.

Supplementary Test

But there is a supplementary test, the MON method, where the test engine is run at higher speeds of rotation and with a preheated fuel-air mixture.

The MON value of the gasoline usually lies 10 units below the RON value, but West German tests indicate that the MON value of methanol lies as much as 20 units below the RON value. In other words, methanol then has the same MON value as premium gasoline.

This means that there is a risk that the methanol engine will knock at high speeds of rotation if the compression is adapted to the high RON value of the fuel.

And knocking at high speeds of rotation is considerably more dangerous than at low speeds of rotation. It is not detected by the unassisted ear but can destroy the engine in a few seconds. Saab has already run into engine damage of this type.

"A possible solution to the problem may be an engine with a relatively high compression, approximately 1:12," says Per Gillbrand.

It gives a high torque even at low speeds of rotation. At the same time it is necessary to choke the engine at high speeds, which means that full power will not be used. This is to reduce the risk of high-speed knocking.

Best in City Traffic

This solution reminds us of the H-engine, which sits in all new Saab models.

Since the torque is high at relatively low speeds of rotation, the engine can be geared high. This gives a low fuel consumption.

"A methanol engine of this type is probably most suitable in vehicles which are driven mostly in city traffic and which comply with Swedish speed limits. On the other hand, it is worse for free driving on West German freeways."

"Another problem with methanol is its sensitivity to 'hot spots.' A glowing flake of soot in the combustion chamber or a too hot spark plug can trigger a premature explosion.

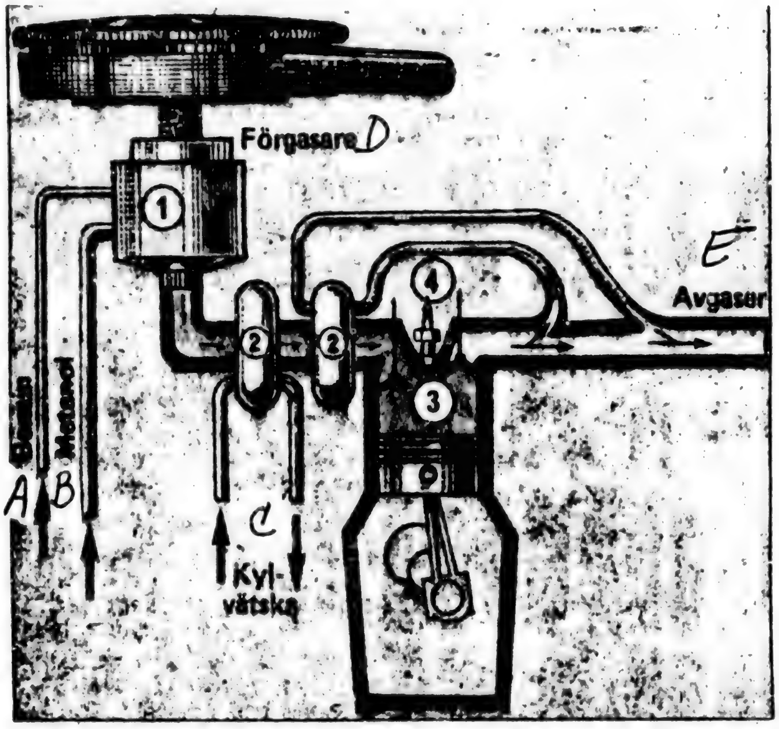
"If the explosion takes place in the compression stroke the quantity of heat released is charged to the cylinder. There is no audible warning, and it does not help to turn off the ignition. The engine can break down in an instant.

"In order to counteract the self ignition tendency we should possibly have a richer fuel-air mixture at high speeds of rotation in order thus to obtain better cooling in the cylinders," says Per Gillbrand.

"We may possibly also have to control the preheating according to both the speed of rotation as well as the external temperature."

In external appearance the methanol engine differs from the gasoline engine only in the preheating.

Saab has pulled the cooling water system up around the intake pipe. The preheating is necessary in order for the methanol to be vaporized and thus mixed optimally with the air.



Drawing by Ingemar Franzen

Basic diagram of methanol engine.

The carburetor, 1, differs from the gasoline engine primarily by the fact that in principle it has double capacity. The energy content of methanol is only one-half that of gasoline. In addition, the methanol engine will probably be started with gasoline.

The preheating, 2, can take place in part through the cooling water system, in part by pulling the exhaust system up over the intake pipe. Volvo has a combination of both methods.

The compression, 3, is increased to between 1:12 and 1:14. However, it is possible that the engine is choked at high speeds of rotation, which means that the power is reduced. The purpose of this is to prevent knocking and possible engine damage at high speeds of rotation.

The spark plug, 4, is of the cold type to prevent glow ignition. Methanol is considerably more sensitive to "hot spots" than gasoline.

Key:			
A.	gasoline	D.	carburetor
B.	methanol	E.	exhaust gases
c.	cooling liquid		

Expensive Over the Long Term

But the preheating does not operate when the engine is completely cold, i.e., for cold starting. Then one could use a separate starting fuel, most conveniently gasoline.

Or else, one mixes 10 percent isopentane into the methanol. However this becomes expensive over the long term. Especially since it corresponds to 20 percent of the anticipated gasoline consumption.

The reason is that methanol contains barely one-half as much energy as gasoline. In other words, the methanol engine drinks twice as much fuel as the gasoline engine.

One-and-one-half years of development work still remains before Saab can present its prototype of a twin-carburetor methanol engine. And many problems remain to be solved.

Among other things the cold starting, the exhaust gases, and the effect of the methanol on metals, plastics and rubber.

"I believe it would be simple to work with methanol," says Per Gillbrand. "Of course, the fuel consists only of one type of molecule, while gasoline contains a mixture of components, everything from asphalt to gas."

"But we actually know considerably more about gasoline than about methanol, which has given us a series of completely new problems."

For one thing, methanol can produce explosive gas mixtures in the fuel tank. On the other hand, the gasoline vapors are supersaturated and are not ignited.

The explosion risk can be avoided by mixing in 10 percent gasoline. This simultaneously improves the driving quality after cold starting.

Other problems show up only over the long range. Tests in the United States indicate that methanol can affect the lubricating oil of the engine and thus cause wear in the pistons and cylinders.

In addition, small quantities of formic acid are formed during the combustion. It can penetrate into the lubricating oil and lead to corrosion.

Per Gillbrand still promises:

"The day when methanol is commercially available as fuel for cars, we will also have a methanol engine in production."

Volvo is Already Test Driving Two Methanol Cars

Volvo is also developing a methanol engine, of a carburetor type.

While Saab is still working only on the test bench, Volvo has already from the start installed engines in two cars.

"We are testing the driving quality, cold starting and the ability of various materials to resist methanol," says Jan Allbjer, who directs Volvo's development of the methanol engine.

In order to achieve effective preheating, Volvo has pulled both the exhaust gas pipes and the cooling water pipes up around the intake pipe.

As starting fuel Volvo uses gasoline. It is pumped into the carburetor while starting and until the engine has become warm. In approximately the same way as a gasoline engine is choked.

In addition Volvo is driving on a mixture of 10 percent gasoline and 90 percent methanol.

"We at Volvo believe that adding gasoline solves several problems and expect that it will remain in the future too," says Jan Allbjer.

While Saab has had certain problems with knocking at high speeds of rotation--and has even had a case of engine damage--Volvo has not had the same problem.

"We have driven with varying compression ratios. Up to almost 1:14."

Neither has Volvo had problems with "hot spots" in the combustion chamber.

But like Saab's Per Gillbrand, Jan Allbjer says:

"The day when methanol is sold generally as car fuel we will have a methanol engine in production."

8958
CSO: 3102/162

GOOD YEAR FOR AIRBUS IN 1981, GOOD PROSPECTS

Paris ELECTRONIQUE ACTUALITES in French 5 Feb 82 p 9

[Unsigned article]

[Text] Speaking to the press, Mr Lathiere, managing director of the Airbus Industrie consortium, stated that 1981 has been a good year for his organization, which has avoided the crisis.

During 1981, Airbus received one-half of the world's orders for large carrier planes, compared to 24 percent in 1980. "Last year, we received firm orders for more planes (46) than we delivered (39)," indicated Mr Lathiere.

In 1981, the European consortium passed the 500-mark for planes on order; 43 companies have so far ordered 505 Airbus A-300's and A-301's, with 159 of them on option.

The production rate of the aircraft manufacturer is currently 4.2 planes per month, and the goal of the development plan is to bring this figure to eight planes per month. The number of people who are presently working for Airbus Industrie in Europe should therefore be more than twice as large by 1985, going from 20,000 to about 45,000 in three years.

Describing the development prospects for Airbus A-320, for the time being ordered only by Air France, Mr Lathiere assured the press that a decision for industrial production will be made before the end of the quarter. Airbus Industrie is still hoping to receive the support of the American company Delta Airlines, as a second launching company, while emphasizing that the A-320 will be equally as profitable outside the United States.

The inception of this program would be an opportunity for realigning the participation in the European consortium, and for eventually adding new partners; contracts have been signed with Italy, Yugoslavia, and Japan; Belgium and Canada have also expressed interest in this new program.

11,023
CSO: 3102/157

ATR 42 EXPECTED TO FILL IMPORTANT NICHE IN COMMUTER MARKET

Rome LA REPUBBLICA in Italian 7/8 Feb 82 p 36

[Text] The 1970's envisaged the inauguration of a new system of air transportation: one that would respond to the requirements of traffic involving regional areas or urban centers having a volume of demand less than that prevailing on the principal international and national routes. "Third-level" transportation was accordingly developed to provide the smaller centers and regional hinterlands with the possibility of becoming integrated into the network of air services linking the major airports, and also to contribute a flow of local and occasional traffic to those airports.

In the economically developed countries--principally the United States--this function has taken on considerable importance, meeting the demand for third-level, or "commuter," services: a term used to identify the aircraft themselves that serve these routes. The commuter planes, in fact, solve the problems not only of the passengers but also of the airlines--which are condemned to suffer escalation of the costs of operating the large jets since the petroleum crisis--on routes that have a relatively light flow of traffic. Moreover, they have shown themselves to be the most suitable means of air transport for short hauls and for markets that are in the process of developing.

The commuter planes, generally speaking, have no more than a 50-seat capacity. They are designed for short-haul flights (of several hundred kilometers) and offer the advantage of operating costs that are substantially lower than those of jet aircraft such as the DC 9 for those routes on which planes of the latter type become uneconomic to operate. The result is that these communities are deprived of air service, or the service is maintained only at the cost of a great deal of strife.

In the United States, the "deregulation"--which has liberalized the marketing policies of the airlines at the first and second levels--has enabled the commuter airlines, and commuter traffic, to attain growth rates that are double those of the rest of the air transport industry, while substantial prospects are opening up in all countries in which these aircraft are able to provide an effective solution to the problem of short-haul air transportation.

In this sector, the recent industrial agreement between the Aeritalia Company (of the IRI-Finmeccanica [Industrial Reconstruction Institute-Mechanical Engineering Finance Corporation] group) and AEROSPATIALE [National Industrial Aerospace

Company], the largest French aerospace group, marks the beginning of the development and production of an Italo-French commuter plane for the international market. The program for the ATR 42 (Regional Transport Aircraft 42) has been the object of collaboration between the two companies that was initiated in 1980 and led to the decision to merge their respective (and similar) projects--the AIT 230 [Aeritalia 230] and AS 35 [AEROSPATIALE 35]--which had long been under study. The agreement--which was concluded coincidentally with the annual American "convention" of the third-level airlines--emphasizes the objectives of collaboration within the framework of the European aviation industry: according to a memorandum from the Italian minister of industry, "the ATR 42 project is in response to the industrial policy directives recently laid down by the Italian Government in the program finalized for the aviation industry, which favors initiatives that are implemented through the medium of forms of international cooperation."

The basic model provides for 42 seats in four rows, with plans for subsequent versions (of 45 seats) and also for cargo models. The aircraft will have numerous components of advanced technology in respect to aerodynamics, cabin acoustics, materials, onboard equipment and motors (two new-generation 1800-horsepower turboprop engines). Its maximum weight at takeoff is 14,700 kilograms, and its cruising speed is more than 500 kilometers per hour. Moreover, the ATR 42 will require a relatively short runway (1,000 meters) and have a range of 1,300 kilometers: that is, it will be able to complete four flights of 185 kilometers without refueling.

As for other commuter aircraft, the Italo-French plane appears to be remarkably competitive, with 30 to 50 percent less fuel consumption. However, the interest in the joint Aeritalia-AEROSPATIALE project resides above all in world market demand, which is forecast at 2,500 aircraft of this type over the next 20 years, with potential sales for the ATR 42 of approximately one-third of the total demand. The auspicious response of the market to the new plane is, moreover, already borne out by numerous orders from various airlines, including the largest commuter airlines in the United States.

To manage the program, Aeritalia and AEROSPATIALE have provided for the formation of an "Economic Interest Group"--GIE--in accordance with a French legal formula that has proved to be particularly applicable to the management of joint programs. By joint decision, the agreement specifically entrusts the Italian company with the construction of the fuselage, fins and corresponding systems, and AEROSPATIALE with construction of the wing, other onboard equipment and the final assembly. On the Italian side, production of the aircraft will also involve the participation of the other enterprises of the sector.

The schedule for the ATR 42 calls for the prototype to be completed and make its initial flight in the summer of 1984.

10992
CSO: 3102/161

END

END OF FICHE

DATE FILMED

26 March 82